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EXAMINER

PHAM, CHRYSTINE

ART UNIT PAPER NUMBER

2192

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,191

Applicant(s)

VION-DURY ET AL

Examiner

Chrystine Pham

Art Unit

2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to Amendment filed on January 28th 2005. Claims 17-18 have been canceled. Claims 1, 15-16 have been amended. Claim 19 is new claim. Claims 1-16, 19 are presented for examination.

Response to Amendment

2. In view of the amendment to specification to include serial number for the related application, objection to the specification is hereby withdrawn.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 10-11, 15, and 16 have been considered but are moot in view of the new ground(s) of rejection. It is further noted that the Interview Summary does not indicate any claims containing allowable subject matter as remarked by the Applicant (page 9). The Interview Summary only indicates that upon Applicant's submission of the amended claims, the Examiner will perform new search.
4. Other arguments filed January 28th 2005 have been fully considered but they are not persuasive.

First, the Applicants characterize the evaluation of value "0" which results in a false (i.e., distinguished value) and the evaluation of nonzero values which results in a true (i.e., success result) as "equivalent to 'mapping' and is not an evaluation of a sub-statement that produces a success result when the operation succeeds or a distinguished value, when the operation fails" (pages 9-10). In col.12:30-55, Ptacek discusses Boolean expression and Boolean operators (i.e., AND and OR). Ptacek specifically states that "as soon as a condition arises that satisfies the expression conclusively (a subexpression of an AND statement evaluates false, or a subexpression of an OR statement evaluates true), the Boolean expression ceases to evaluate".

Ptacek further illustrates a sample AND statement "1 && 0 && foo()" and specifically states that this statement "not only does not evaluate [to] true (the AND statement groups '0' into the expression which evaluates false), but also it never causes 'foo()' to be called, since the expression is short-circuited after the second subexpression". Needless to say, the "second subexpression" is clearly referring the value "0" in the above AND statement. Furthermore, each of the 1, 0, and foo() in the above AND statement is a subexpression (i.e., sub statement) which is to be individually evaluated. There is no "mapping" involved in the evaluation of a Boolean expression as has been characterized by the Applicants.

Similarly, Applicants argue with respect to claim 9 that Ptacek does not teach "a substatement has rule statement, let alone a rule statement having either a first or second argument, where the evaluation of the first rule triggers the evaluation of the second argument" (page 10). As established in previous Office Action, claim 9 is anticipated by Ptacek's "1 && 0 && foo()" sample AND statement. Again, each of the "1", "0", and "foo()" of the statement is a subexpression (i.e., substatement). It is further submitted that each of the subexpression (i.e., substatement) itself is an "argument" since the "&&" operator is a binary operator (i.e., needs two arguments one both sides to be evaluated). It is further submitted that, a logical expression (i.e., rule statement) which comprises of a logical operator (such as &&) and two arguments on both sides (such as "1 &&0") is the equivalence of a "rule statement" as claimed. It is further submitted that, since the evaluation of "1" results in a true, and since "1" is a first argument being evaluated in the AND logical expression (i.e., rule statement), it triggers the evaluation of the second argument "0" in order to evaluate whether the AND expression "1 && 0" evaluates to true (i.e., success result) or false (i.e., distinguished value). Thus, "1 && 0" clearly anticipates the "at least one of the first or second substatements includes a rule statement having a first argument and a second argument, the evaluation of the first argument triggering the evaluation of the second argument". In response to Applicants argument that Ptacek's "Boolean operators which are evaluated left-to-right and are distinct from the 'sub expression' upon which the operators

operate, it is submitted that all Boolean expressions are to be evaluated. The Boolean operators (e.g., OR) are there to determine/rule how the evaluation is performed (e.g., whether to evaluate a second subexpression in an OR expression when the first subexpression already evaluates to true). Thus, it is not the Boolean operators that are being evaluated, but rather, the subexpressions/arguments that are found on both sides of each of the Boolean operators.

With respect to claim 11, Applicants further contend that Ptacek does not disclose "at least one of the first or second substatements includes an unordered action system" (page 10) and remarks that Ptacek's collection of statements which can stand on its own, therefore is based on an ordering of the statements. It is thus concluded that, Ptacek's collection of statements anticipates "an ordered action system" (recited in claim 10) where each statement in the collection is an action (i.e., an assignment or an evaluation) to be tried in "an order".

With respect to claim 10, Applicants argue that Java does not teach "an ordered action system". Instead, the Applicants contend that Java discloses "a series of programming statements that dynamically changes the order of the actions to be tried" (page 12). It is thus concluded that, Java suggests "an unordered action system" (as recited in claim 11) since it is not known in which order a statement (i.e., switch case or "action") in "series of programming statements" (i.e., switch cases) will be tried dynamically.

With respect to claims 4-5, the Applicants seem to rely on Court's Abstract to argue that Court does not teach "concurrent evaluation of a first and second sub-statement" without giving adequate consideration to the passages cited in previous Office Action in which Court clearly discloses "current evaluation of a first and second substatement". Thus, Applicants' argument is deemed unpersuasive and rejection of claims 4-5 is considered proper and maintained.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning (page 12), it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-16, 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 1 recites the broad recitation "structure" (last line), and the claim also recites "sequence, tuple, multi-set, dictionary" which is the narrower statement of the range/limitation.

Accordingly, claims 1-14, 19 are rejected as claims depending rejected base claim 1. Claims 15, and 16 recite the broad limitation "structure" and the narrower limitation "sequence, tuple, multi-set, dictionary", therefore, are rejected for the same reasons cited in claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 8-10, 12-16, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ptacek et al. (US 6636972), hereinafter, *Ptacek et al.* in view of Safonov (US 5892951), hereinafter, *Safonov*.

As per claim 1, *Ptacek et al.* teach a method of operating a computer system comprising a memory (i.e., article of manufacture) for storing instructions (e.g., see *MAIN MEMORY 102, CACHE MEMORY 109, MASS STORAGE 107* FIG.1 & associated text) for evaluating a programming language statement (e.g., see *SCRIPTS 271* FIG.2B & associated text, see *CASL program statements* col.9:53-62, see *AND statement, OR statement* col.12:36-45) stored in memory (e.g., see *MAIN MEMORY 102, CACHE MEMORY 109, MASS STORAGE 107* FIG.1 & associated text, col.5:15-23, col.4:65-66) that includes a first and a second sub-statement (e.g., see *expressions* col.9:53-62, see *subexpression, AND statement, OR statement* col.12:36-45), the method comprising the steps of:

- o a processor (e.g., see *CENTRAL PROCESSOR 101* FIG.1 & associated text, *CASL COMPILER 273* FIG.2B & associated text) evaluating the first sub-statement (e.g., col.12:38-40) and the processor determining an evaluation success result if the evaluation succeeds (e.g., see *OR statement evaluates true* col.12:40) or a distinguished value if evaluation fails (e.g., see *AND statement evaluates false* col.12:39); said distinguished value being a value not included in the range of possible evaluation success results (e.g., see *value "0", "false"* col.10:46-47, see *any nonzero value, "true"* col.10:47) of the first sub-statement;
- o determining whether the second sub-statement is to be evaluated, and if so, evaluating the second sub-statement and determining an evaluation success result if evaluation succeeds or said distinguished value if evaluation fails (e.g., see *"short-circuit", expression ceases to evaluate* col.12:36-42); a range of possible evaluation success results of the second sub-statement not including said distinguished value (e.g., see *value "0", "false"* col.10:46-47, see *any nonzero value, "true"* col.10:47); and
- o the processor determining an evaluation result of the statement depending on at least whether evaluation of the first sub-statement succeeds or fails (e.g., see *"short-circuit", AND and OR operations* col.12:30-55)
- o wherein the evaluation success result of the first sub-statement and the evaluation success result of the second sub-statement belong to a first type in a set of types wherein the first type in the set of types comprises one from the set of integer, float, Boolean, sequence, tuple, structure, multi-set, dictionary, string and enumeration (e.g., see *value "0", "false"* col.10:46-47, see *any nonzero value, "true"* col.10:47; see *print(i), print ("i is zero")* col.12:5-30).

Ptacek et al. do not expressly disclose the distinguished value belongs to a second type not in the set of types; and wherein each type in the set of types is not a supertype of the second type. However, *Safonov* discloses a method of evaluating [semantic attributes/variable types in] a programming language substatement during syntactical analysis of the program (see at least FIG.5B & associated text; see *first*

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type, multiply operation 1002, 1006 FIG.10 & associated text) and determining an evaluation success result if the evaluation succeeds (see at least *1006, 1008 FIG.10 & associated text*) or a distinguished value if evaluation fails (see at least *1004, NIL FIG.10 & associated text*); said distinguished value belongs to a second type (see at least *1004, NIL FIG.10 & associated text*) not in the set of types (see at least *integer, float, double 1006, 1008 FIG.10 & associated text*); and wherein each type in the set of types (see at least *integer, float, double 1006, 1008 FIG.10 & associated text*) is not a supertype of the second type (see at least *1004, NIL FIG.10 & associated text*). *Ptacek et al.* and *Safonov* are analogous art because they are directed to evaluating programming language statements. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of *Safonov* into that of *Ptacek et al.* for the inclusion of distinguished value belongs to a second type not in the set of types. And the motivation for doing so would have been to more efficiently identify TYPE mismatching or semantic errors (i.e., semantic analysis) during syntactical analysis, eliminating the need for a separate tree-traversals required by the semantic analysis, thus minimizing compilation time (see *Safonov* col.1:59-col.2:37; col.7:48-52).

As per claim 2, *Ptacek et al.* teach the method as applied to claim 1, wherein the second sub-statement is evaluated if evaluation of the first sub-statement did not fail, and the evaluation result of the statement is determined to be the evaluation success result of the second sub-statement if evaluation of the first and the second sub-statements succeeds (e.g., see *AND operator, 1 && 3 && 2* col.12:30-55), and wherein the evaluation result of the statement is said distinguished value if evaluation of at least one of the first and second sub-statements fails (e.g., see *AND operator, 1 && 0 && foo()*; col.12:30-55).

As per claim 3, *Ptacek et al.* teach the method as applied to claim 1, wherein the second sub-statement is evaluated if evaluation of the first sub-statement fails, and wherein the evaluation result of the statement is the evaluation success result of the first sub-statement if evaluation of the first sub-statement succeeds; the evaluation result of the statement is the evaluation success result of the second sub-statement if evaluation of the first sub-statement fails but evaluation of the second sub-statement

succeeds; and the evaluation result of the statement is said distinguished value if evaluation of both the first and the second sub-statements fails (e.g., see *"short-circuit", OR operator* col.12:30-55).

As per claim 8, *Ptacek et al.* teach the method as applied to claim 1, wherein at least one of the first and second sub-statements includes a closure loop statement having an operand indicating that evaluation of the respective sub-statement does not stop before said operand evaluates to said distinguished value (e.g., see *control construct, expressions, while loops* col.9:56-63).

As per claim 9, *Ptacek et al.* teach the method as applied to claim 1, wherein at least one of the first or second sub-statements includes a rule statement having a first argument and a second argument, the evaluation of the first argument triggering the evaluation of the second argument (e.g., see *1 && 0 && foo();, short-circuited after second subexpression* col.12:50-55).

As per claim 10, *Ptacek et al.* teach the method as applied to claim 1, wherein at least one of the first or second sub-statements includes an ordered action system (e.g., e.g., see *control construct, if conditionals* col.9:58-61, see *collection of statements, assignments* col.10:33-45).

As per claim 12, *Ptacek et al.* teach the method as applied to claim 1, wherein one of the first and second sub-statements is a declarative statement and the other one of the first and second sub-statements is an imperative statement (e.g., see *control construct, if conditionals* col.9:58-61, see *collection of statements, assignments* col.10:33-45).

As per claim 13, *Ptacek et al.* teach the method as applied to claim 1, wherein the first and second sub-statements are typed according to a hierarchy of types (e.g., see *Integers* col.10:14).

As per claim 14, *Ptacek et al.* teach the method as applied to claim 13, wherein said hierarchy of types includes at least one minimal type (e.g., see "*false*", value "*0*", "*true*", any nonzero value col.10:45-47).

Claim 15 recites an article of manufacture version of the method addressed in claim 1, therefore, is rejected for the same reasons as cited in claim 1.

Claim 16 recites a system version of method addressed in claims 1 and 2, therefore, is rejected for the same reasons as cited in claims 1 and 2.

As per claim 19, *Ptacek et al.* further teach wherein evaluation of at least one of the first sub-statement and the second sub-statement comprises a pattern matching operation (see at least two strings, equality comparison col.11:25-67).

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ptacek et al.* and *Safonov* as applied to claim 1 further in view of *Court et al.* (US5276854), hereinafter, *Court et al.*

As per claim 4, *Ptacek et al.* teach the method as applied to claim 1 wherein the first and second substatements are evaluated, and the evaluation result of the statement is said distinguished value if evaluation of at least one of the first and second sub-statement fails (see claim 2) otherwise, the evaluation result is said distinguished value only if evaluation of both the first and second sub-statements fails (see claim 3). *Ptacek et al.* do not expressly disclose evaluating the second sub-statement concurrently with the first sub-statement. However, *Court et al.* disclose a method of evaluating the first and second sub-statements (e.g., see statement, Boolean logic equation col.3:40-51, see evaluating the Boolean equation, $PHA = (BBF.and.BAE.and.TCL).or.(PPH.and.tcl)$ col.5:41-62) concurrently (e.g., see in parallel col.4:52-54, see simultaneously evaluate col.3:64-68, see evaluated simultaneously col.4:65-68). It would

have been obvious to one of ordinary skill in the pertinent art at the time the invention was made to incorporate the teaching of *Court et al.* into that of *Ptacek et al.* to include concurrent evaluation of first and second sub-statements. And the motivation for doing so would have been to reduce execution time required by the evaluator (i.e., processor) (see *Court et al.* col.4:50-68).

As per claim 5, it recites limitations, which have been addressed in claim 4, therefore, is rejected for the same reasons as cited in claim 4.

6. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ptacek et al.* and *Safonov* as applied to claim 1 further in view of *Davidson et al.* (US 5613117), hereinafter, *Davidson et al.*.

As per claim 6, *Ptacek et al.* teach the method as applied to claim 1 wherein the first and second sub-statements are evaluated and the evaluation result of the statement is said distinguished value if evaluation of at least one of the first and second sub-statements fails (see claim 2), otherwise, the evaluation result of the statement is said distinguished value if evaluation of both the first and second sub-statement fails (see claim 3). *Ptacek et al.* do not expressly disclose the second sub-statement is evaluated independently on whether evaluation of the first sub-statement succeeds. However, *Davidson et al.* disclose a method for evaluating the second sub-statement independently on whether evaluation of the first sub-statement succeeds and the evaluation result of the statement is said distinguished value if evaluation of at least one of the first and second sub-statements fails (e.g., see *full evaluation* col.39:59-60, see *LANDU computes the logical conjunction of the two Boolean values, guaranteeing that both operands will be evaluated* col.65:56-58), otherwise, the evaluation result of the statement is said distinguished value if evaluation of both the first and second sub-statement fails (e.g., see *LORU Computes the logical disjunction of two Boolean values, guaranteeing that both operands will be evaluated* col.65:66-col.66:7). It would have been obvious to one of ordinary skill in the pertinent art at the

time the invention was made to incorporate the teaching of *Davidson et al.* into that of *Ptacek et al.* to include full evaluation of both first and second sub-statements. And the motivation for doing so would have been that full evaluation of both first and second sub-statements yield real mode values, which may represent named, literals or specific address modes for a compiler.

As per claim 7, it recites limitations, which have been addressed in claim 6, therefore, is rejected for the same reasons as cited in claim 6.

7. Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Ptacek et al.* and *Safonov* as applied to claim 1 in view of Dave Dyer – Java decompilers compared (http://www.javaworld.com/javaworld/jw-07-1997/jw-07-1997/jw-07-decompilers_p.html), hereinafter, *Java*.

As per claim 11, *Ptacek et al.* teach the method as applied to claim 1. *Ptacek et al.* do not expressly disclose at least one of the first or second sub-statements includes an unordered action system. However, *Java* discloses a programming language statement with at least one of the first or second sub-statements including an unordered action system (e.g., see *switch (CTL_PC)* page 9 under section DejaVu's reconstruction). It would have been obvious to one of ordinary skill in the pertinent art at the time the invention was made incorporate the teaching of *Java* into that of *Ptacek et al.* to include an unordered action system in at least one of the first or second sub-statements. And the motivation for doing so would have been that switch statements are designed to efficiently define many alternative branches (i.e., cases) (in comparison to defining alternative branches by nesting many if-then-else statements), exactly one of which can be selected from for execution without the need to test or evaluate subsequent branches, thus reducing execution time required by the evaluator (i.e., processor).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chrystine Pham whose telephone number is 571-272-3702. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CP
May 24, 2005



TUAN DAM
SUPERVISORY PATENT EXAMINER